Characteristics of the Sex Chromatin; C. F. A. Culling, Staining Affinities and Cytochemical Properties of the Sex Chromatin; Susumu Ohno, Single-X Derivation of Sex Chromatin; Murray L. Barr, Correlations Between Sex Chromatin Patterns and Sex Chromosome Complexes in Man; E. G. Bertram, Behavior of the Sex Chromatin During Altered States of Cell Metabolism; Keith L. Moore, The Development of Clinical Sex Chromatin Tests; Peter J. Carpentier, Sex Chromatin in Smears from the Reproductive and Urinary Tracts; Neil Maclean, Sex Chromatin Surveys of Newborn Babies; Charles P. Miles, The Sex Chromatin in Cultured Cells; Povl Riis and Fritz Fuchs, Sex Chromatin and Antenatal Sex Diagnosis; Keith L. Moore, The Sex Chromatin of Freemartins and Other Animal Intersexes; C. R. Austin, Sex Chromatin in Embryonic and Fetal Tissues; P. K. Basu, Sex Chromatin in Transplanted Tissues; Alan C. Stevenson, Sex Chromatin and the Sex Ratio in Man; Malcolm A. Ferguson-Smith, Sex Chromatin, Klinefelter's Syndrome, and Mental Deficiency; Keith L. Moore, Sex Chromatin and Gonadal Dysgenesis; Paul E. Polani, Sex Chromatin, Sex Chromosomes, and Sex-Linked Characters; Mary F. Lyon, Sex Chromatin and Gene Action in the X Chromosome of Mammals; Bernard Lennox, The Sex Chromatin and Hermaphroditism; Amândio S. Tavares, Sex Chromatin in Tumors; John Money, The Sex Chromatin and Psychosexual Differentiation; Kurt Benirschke, Sex Chromatin and Developmental Abnormalities; Keith L. Moore, Sex Chromatin and Medicolegal Problems.

The 22 contributors have brought together a large amount of material and have synthesized it well. Many of the chapters serve as a stimulus for additional research by pointing out ways in which the sex chromatin may be used as research tool and by delineating areas in which further research is necessary. An excellent example of such a discussion is that of Polani on sex chromatin, sex chromosomes, and sex-linked characters. Other examples of the use of the sex chromatin as a marker are given by Austin in his discussion of maternal and fetal contributions to placental tissue and by Basu in describing studies on the fate of grafted tissue.

It is appropriate that Dr. Moore should be the one to undertake the task of editing this volume. He was on the scene in London, Ontario, during the time that the sex chromatin story was being born, and he has participated significantly in its nurture. He has chosen well the individuals to prepare chapters for this book and has made a significant personal contribution to the body of the text. Furthermore, he has done a splendid job of inserting helpful cross-references in the various chapters.

This book should prove stimulating to anyone who has an interest in mammalian genetics and development. It is recommended highly as a reference text for students, teachers, investigators, and physicians dealing with these areas. *(M. Neil Macintyre)*

The Effects of Inbreeding on Japanese Children. By William J. Schull and James V. Neel. New York: Harper and Row, 1965 (419 pp., $15.00).

An intensive study of the characteristics of children from cousin marriages has been carried out by Shull, Neel, and their various collaborators, using as a starting point the records arising from the Atomic Bomb Casualty Commission's search for possible genetic effects of the nuclear bombings of Hiroshima and Nagasaki. Of the 76,626 pregnancies over the years 1948 to 1953, on which this earlier investigation was based, 7% were known through the questionnaires to be from consanguineous parents and 4% from marriages of first cousins. The present volume describes observations extending to the age of eight years, involving some 4,475 inbred and 4,817 outbred children for whom the degree of, or absence of, parental consanguinity had been ascertained initially through the files of the earlier study.

The present investigation is unique among studies of inbreeding effects in man in that it makes use of systematic observations of a wide range of characteristics in relatively large numbers of children. It has demonstrated substantial correlations with the risks of mortality and of physical disease; both were increased by more than 25% in offspring from first cousins, as indicated by the pooled data for the two cities, although the effect on mortality was observed chiefly in Hiroshima and the increase in physical disease was more marked in

Nagasaki. Less striking adverse consequences of inbreeding were detected relating to body measurements, calcification of bones and teeth, neuromuscular development, and mental ability. Allowances are made in the analyses, wherever feasible, for the contribution to such effects from a known small negative correlation between consanguineous parentage and socio-economic status.

Less important features of the book, contained in its final chapter, are a discussion of the possible interpretations of inbreeding effects and an attempt to indicate what the future of human consanguinity studies might profitably be. The discussion of theory will not necessarily please all who have taken an interest in this controversial area (a difficult task for any author). The reviewer, for example, would have liked to see some mention of the fact that the important class of so-called "quasi-continuous" traits would be expected to exhibit consanguinity effects even where there is no recessive component and no influence of homozygosity *per se* on homeostatic mechanisms. Also, the discussion of the future of human consanguinity studies fails to mention the need for knowledge of inbreeding effects as relating to particular diseases. Elsewhere in the present account, there is a useful breakdown of the Japanese data by disease entity, and the reviewer was able to ascertain from the numbers thus provided that the inbreeding effect is confined largely to the rare diseases, i.e. to the combined data for these. This was true for both the "major" and the "minor" conditions, which are treated separately in the tables. Even with a study of this size, however, the numbers are not sufficient to permit conclusions to be drawn concerning particular diseases. In discussing the future of human consanguinity studies, some thought ought perhaps to have been given to ways of overcoming such an important limitation. Data of this kind are not unobtainable, as indicated by studies of a different design carried out in the past, but the best information currently available about disease-specific consanguinity effects is now a number of decades old. Such omissions from the present volume are of minor importance, however, as they occur in a single chapter that has only slight connection with the rest of the book, and they do not detract from the main account of what was indeed a monumental undertaking.

The study is documented with exceptional thoroughness. The mathematical procedures used in analyzing the data are described in workmanlike detail in one of the early chapters. Approximately half of the space in the 351 pages of text is devoted to figures and tables. The manner of collection of the raw data and further details of the calculations are dealt with in two appendices. There is a bibliography of more than 300 entries, plus an author index, and a subject index with more than 1,000 entries. The material was originally destined for publication as a series of journal articles. These would not, however, have permitted future investigators to follow in such detail the manner in which this present study had been carried out.

Human inbreeding provides, as it were, a "window" through which an important and otherwise largely hidden component of the gene pool may be detected. For this reason, interest in the sort of observations which the book describes is likely to continue, even though such investigations may become more difficult in the future. The value of the present volume, as a systematic account of a uniquely thorough and detailed investigation, will diminish little with time. *(Howard B. Newcombe)*